

15 April 1971

MEMORANDUM FOR: [REDACTED]

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SUBJECT : Notes on Visit to Aeronautical Chart and Information Center (ACIC) at St. Louis, 6 April 1971

1. A good representation from the United States Geological Survey, the interested components of the Department of Agriculture, the NASA, the CIA, and various parts of the DoD was in attendance. The succession of briefings was well organized and the question periods were amply used.

2. I must say that the ACIC does an outstanding PR and briefing job. There has been rapid change and growth in the navigation and weapons systems of the Air Force with equally significant changes in the nature of the cartographic and geodetic products required to support the systems and produced by ACIC. All present were convinced that the ACIC mission is indispensable. Attention was also given to ACIC's role in providing charts for our lunar and other space explorations. For Apollo 11, ACIC supplied 61 different types of charts. NASA reimburses ACIC for all this work.

3. Attached as Tab A is the agenda for this technical exchange MC&G visit to the ACIC. In 1960, the ACIC was designated a separate operating agency of the USAF with the administrative and procedural responsibilities of a major air command. The ACIC reports directly to Headquarters, Air Force.

4. The total personnel in the ACIC, including overseas, etc., is about 3,840. In the St. Louis area, there are 177 military and 3,478 civilians. The budget for FY 71 was \$56,000,000.

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USAF review(s) completed.

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5. ACIC supplies the aeronautical charts used by the USAF strike forces, and by the US Navy and Army engaged in SEA operations. Chart series produced include Joint Operations Graphics (Air and Radar), Tactical Pilotage Charts, Operational Navigation Charts, Global Planning Charts, and Missile Planning Charts. Air target materials include Air Target Charts, Mosaics, and Missile and Target Data Sheets. Filmstrips and film chip products support navigation systems for use in fighter aircraft. The ACIC also turns out 150 types of Loran charts and about 150 different types of weather charts, not to mention its Flight Information Publications (FLIPS).

6. Col. Bryon L. Schatzley, former Air Force representative on COMIREX, is the Commander of the Aeronautical Chart and Information Center. All people who have had dealings with ACIC know and highly respect Tom Finnie, who is Technical Director under the Commander of the ACIC. /For your information, he is probably the most knowledgeable person in the whole MC&G field./ The Organization Chart is attached as Tab B.

7. Tom Finnie gave an overall briefing of ACIC activities, mentioning the various Detachments and Squadrons in addition to the basic Production and Distribution Plant at St. Louis. He mentioned the Gravity Library as the official depository for all gravity information held in the DoD as well as the Centralized Library of Aeronautical Charts, and the completely automated file of air facility information (Air Facilities Data Base). Up-to-date information is held for 37,000 airfields. Sometimes 100-250 card/lines are required for a single field. With an IBM 7094, they use about 20,000 card/lines per week in updating.

8. The impact of T-KH material on efficiency with which the ACIC can carry out its responsibilities was stressed. The processes of analytical reduction of data derived from pan, stellar, and frame/terrain camera subsystems was described

in detail. Reference was made to the 4x enlargement of frame imagery and the 4x reduction of pan imagery in order to transfer control and pass points from one to another through the use of the TA-3P equipment. The resulting data is transferred by magnetic tape for input to the AS-11B. The main output of the AS-11B is the MUM at 1:200,000 scale. There are now 1,785 people with tickets in ACIC. The quota is 1,881. I was shown the Ortho-photoplotter which is an attachment to the AS-11B. It is major piece of equipment, but ACIC is not too interested in orthophoto products.

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10. The ACIC has an advanced training program. In addition to its in-house training activity, it sends about 15 people per year for full-time advanced study. They have about 1,500 trained professionals working on T-KH material.

11. There was some discussion of the usefulness of the [redacted] and the Intelligence Reconnaissance Objectives List of the ACIC, which includes a number of points with specific coordinates that can be recognized and add to the tightness of control in denied areas. The Doppler beacon on the KH-4B was also described as a major help in the geodetic problem.

12. There was a briefing on geodetic and geophysical aspects of the CEP budget for accuracies in the strategic bombing of enemy targets. The G&G slice of the error budget has been described as 511 feet. The knowledge of the center of gravity of the earth is, of course, involved. In 1970, the actual value was about 784 feet, but with new work on earth gravitational models, it may be shortly reduced to 438 feet. By 1974, it is hoped that the G&G error will be only 250 feet. Of course, these values not only relate to the inertial guidance of satellites but also to those of aircraft. As will be noted in my report on the visit to the Aerospace Cartographic and Geodetic Service, another element in missilery, is the precise determination of our own launch sites in relation to the World Geodetic System (WGS).

13. The Production and Distribution Plant is the major activity at St. Louis. Here is the Scientific and Technical Office, the Production Management Office, the Research Division, etc. (See Tab B). Many of the scientific types are assigned here, and work chiefly with T-KH material. Messrs. Mahoney, Thompson, Martin, and Bellew are scientists who keep looking to future support to our national security needs.

14. The Sentinel Lock Deployment Data Base is essentially the provision of stereo film chips to the field with control points identified for ground to air point positioning. The Sentinel Lock Loran Data Base is the determination of points by Loran C hyperbolic curve coordinates taken simultaneously with vertical frame photography. The errors, due to various atmospheric conditions, including altitude of the aircraft, may be considerable and corrections are made. The ground positions are then coordinated with the aircraft positions to ensure target accuracy.

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There was some discussion of the SCRAM and SCAD missiles and of the LAPAM (low altitude penetrating attack missiles) and how ACIS products could assist. The TERCOM system, which I have described before, consists of a series of matrices of narrow beam radar altitude readings on a coordinate basis to lead aircraft with homing warheads to target. The radar altimeter locks onto elevation matrices. There are as yet no storage files of matrices for individual flights, although this is the ultimate intent.

16. The ACIC was very proud of its Production and Management Control System (PROMACS). It provided means of improving production planning, effective use of resources, and methods of increasing responsiveness to need. Involved are an Integrated Status Reporting System (ISRS), and Resources Capability Programming and Scheduling System (CAP), and a Computer Assistance Scheduling System (expansion of CAP).

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17. I feel you should know how important the ACIC work is, particularly in contributions to the inertial guidance for the Minuteman Missiles and for strategic AF bombing. In fact, the ACIC complement is a bit greater than the Army's TOPOCOM.



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